Industrial Classed H685 Cellular Router

User Manual for VPN setting

E-Lins Technology Co., Limited

ADDRESS: 1007A, MinTai Bld., Minkang Road, Minzhi Street, Bao'an District, ShenZhen, 518000, China

PHONE: +86 (755) 33231620

Email: sales@szelins.com
sales@e-lins.com
WEB: http://www.szelins.com

CONTENTS

1 PROLOGUE ····· 3
1.1 VERSION ····· 3
1.2 REFERENCED DOCUMENTS ····· 3
1.3 NOTICE ····· 3
2 HOW TO CONFIG IPSEC ····· 4
2.1 NOTES ····· 6
2.2 VPN SERVER (POINT B) ····· 7
2.2.1 Logon the WEB configuration ····· 7
2.2.2 Change local IP ····· 8
2.2.3 Configure WAN ····· 9
2.2.4 Configure VPN Router as VPN Server ····· 10
2.2.4.1 Change local IP address……10
2.2.4.2 Configure VPN Server……10
2.2.5 Config CISCO router as VPN server ····· 12
2.3 VPN CLIENT FOR VPN ROUTER (POINT C) ····· 12
2.3.1 Config WAN1. ····· 13
2.3.2 Change local IP address. ····· 14
2.3.3 Configre VPN Router as Client ····· 14
3 HOW TO CONFIGURE PPTP ····· 16
3.1 NOTES ABOUT IP YOUR CONFIGURATION ····· 18
3.2 PPTP SERVER (POINT B) ····· 19
3.2.1 Change local IP address ····· 19
3.2.2 Configuration WAN ····· 19
3.2.3 Configure PPTP Server ····· 19
3.3 LAPTOP/H685(H800) AS CLIENT (POINT D) ····· 21
3.3.1 Change local IP address ····· 21
3.3.2 Configure PPTP client ····· 21
3.3.3 Config PPTP client of H685/H800 ····· 26
3.4 IPSEC CLIENT FOR SOFTWARE (POINT F) ····· 26
3.4.1 Config IPSec client of software ····· 26
3.4.1.1 Set-up……26
3.4.1.2 Configure IPSec tool……27
4 HOW TO CONFIGURE APN OR VPDN ····· 29
4.1 APN CONFIG ····· 31
4.2 VPDN CONFIG ····· 32

Chapter 1

1 Prologue

This document is suitable for the following products, it will show how to setup a VPN Router that has IPSec VPN capabilities for secure remote access to your cellular network from anywhere on the Internet. Detailed configuration will be shown for multiple brands of routers

Type	Description
H685ev/H800ev	EVDO Router
H685td/H800td	TD-SCDMA Router
H685d/H685u/H800d/H800u	HSUPA/DPA Router

1.1 Version

Version	Date	Description	Author
1.1.3	2009-11-11	Nearly complete	
1.4.31	2011-5-19	Modify	Jason

1.2 Referenced Documents

H685_Datasheet_Eng
H800_Datasheet_Eng

1.3 Notice

E-Lins is a registered trademark of E-Lins Technology Co., Limited.
The copyright of the document belongs to E-Lins Technology Co., Limited. Copying of this document and modifying it and the use or communication of the contents thereof, is forbidden without express authority. Offenders are liable to the legal sanction.

Chapter 2

2 How to config IPSec

IPSec provides authentication and encryption services to protect unauthorized viewing or modification of data within your network or as it is transferred over an unprotected network, such as the public Internet. IPSec is generally implemented in two types of configurations:

- Site-to-site— this configuration is used between two IPSec security gateways, such as PIX Firewall. A site-to-site VPN interconnects networks in different geographic locations.
- Remote access— this configuration is used to allow secure remote access for VPN clients, such as mobile users. A remote access VPN allows remote users to securely access centralized network resources.

IPSec can be configured to work in two different modes:

- Tunnel Mode—This is the normal way in which IPSec is implemented between two security gateways that are connected over an untrusted network, such as the public Internet
- Transport Mode—this method of implementing IPSec is typically done with PPTP to allow authentication of remote Windows 2000 VPN clients.

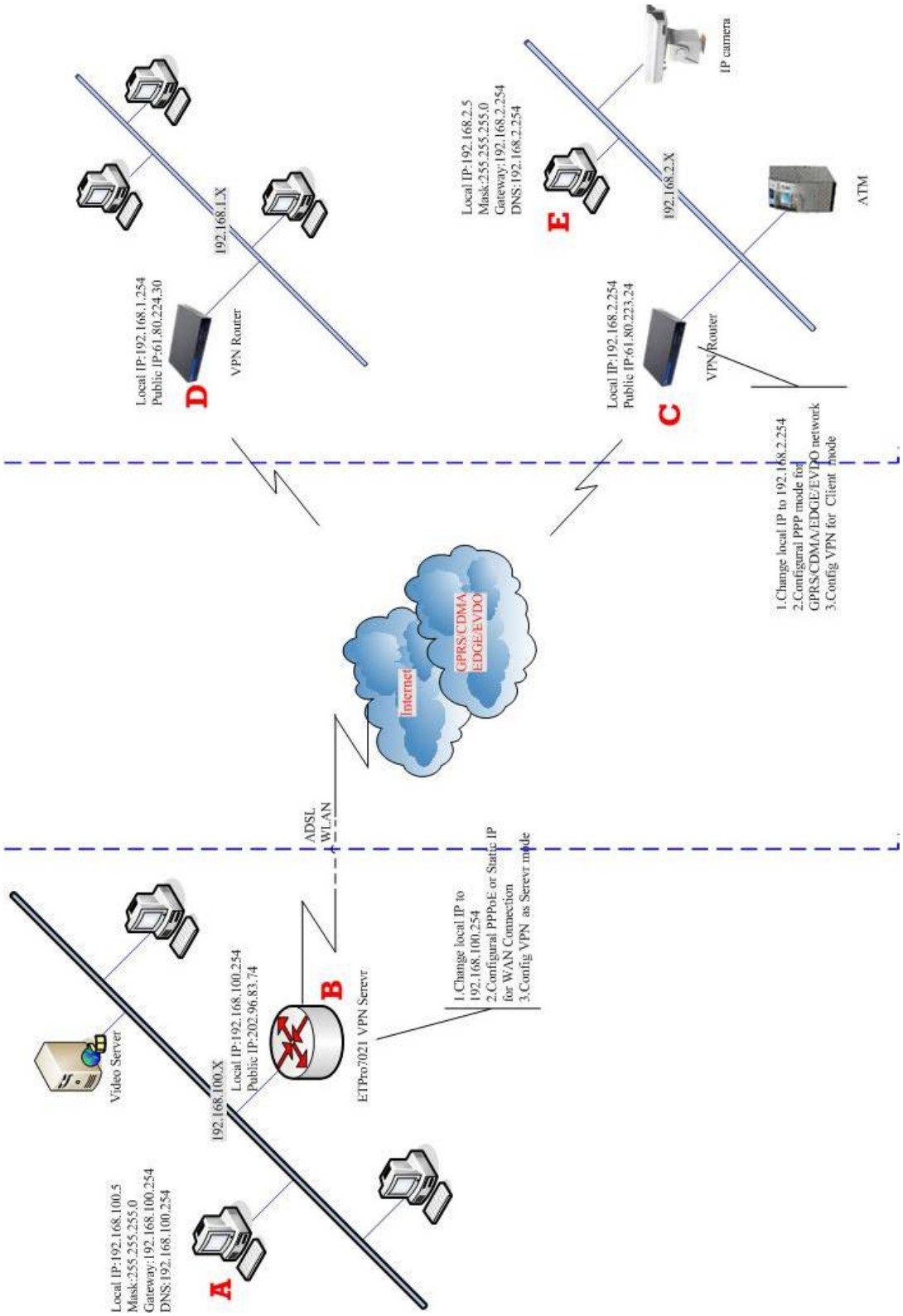
The main task of IPSec is to allow the exchange of private information over an insecure connection. IPSec uses encryption to protect information from interception or eavesdropping. However, to use encryption efficiently, both parties should share a secret that is used for both encryption and decrypting of the information.

IPSec operates in two phases to allow the confidential exchange of a shared secret:

- Phase 1, which handles the negotiation of security parameters required to establish a secure channel between two IPSec peers. Phase 1 is generally implemented through the Internet Key Exchange (IKE) protocol. If the remote IPSec peer cannot do IKE, you can use manual configuration with pre-shared keys to complete Phase 1.
- Phase 2, which uses the secure tunnel established in Phase 1 to exchange the security parameters required to actually transmit user data.

The secure tunnels used in both phases of IPSec are based on security associations (SAs) used at each IPSec end point. SAs describe the security parameters, such as the type of authentication and encryption that both end points agree to use.

In order To enable and configure IPSec, we prepare a test environment, please according to the diagram and perform the following steps
Note: Point A, B, C, E is must.



In this example, we will be working with a VPN server and two VPN Router. Throughout the screen shots and the rest of the article, I will refer to the following IP address. Please write them down or print them for reference, it will help you understand the rest of the article

about A:

local IP: 192.168.100.5

gateway: 192.168.100.254

about B:
WAN IP:202.96.83.74(from your ISP)
Local Router IP:192.168.100.254

About C:
WAN IP:61.80.223.24(Remote computer on the Internet)
Local Router IP:192.168.2.254
LAN IP Network:192.168.2.x

About D:
WAN IP:61.80.224.30(Remote computer on the Internet)
Local Router IP: 192.168.1.254
LAN IP Network:192.168.1.x

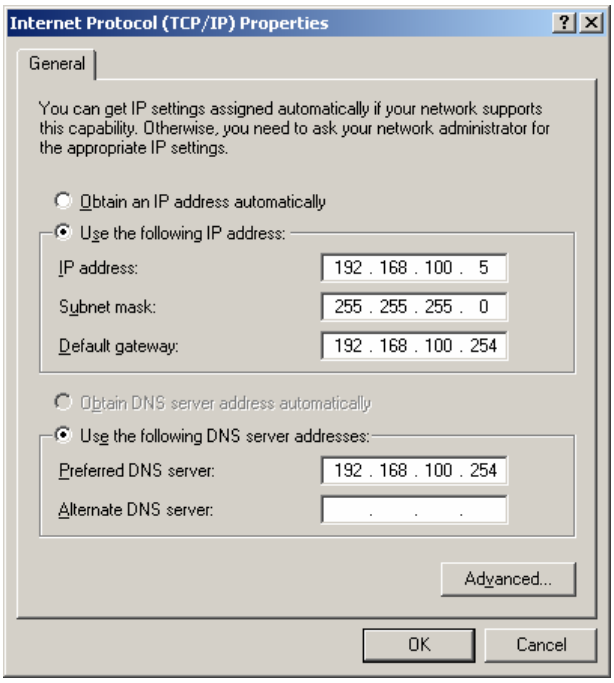
2.1 Notes

It is wise to change the IP Schema of your cellular network from the default your router configures. This will aid you in connecting multiple networks together - especially two VPN routers of the same brand. Often the default IP Schema is 192.168.0.254, all you need to do is change the second Router. In this example, I config my first Router is 192.168.1.254 and another Router is 192.168.2.254. This step is not totally necessary but it could save you some routing headaches later.

It is also wise to convert your computers over to STATIC IP address instead of dynamic IP address. If your computers have dynamic IP address, you will not know what the IP address is of the computer you want to connect to from the road. One day it might be .2 the next day it might be .5. Again this is not necessary, but it will save you headaches later.

Static IP Schema Example (about A LAN Computer 1)

IP Address:	192.168.100.5
Subnet:	255.255.255.0
Gateway:	192.168.100.254 (router address)
DNS:	192,168.100.254 (router address again)


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 100 . 5
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 100 . 254
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 100 . 254
Alternate DNS server:
Advanced...
OK
Cancel

Note: You need change PC IP the same with VPN Router Gateway. Otherwise you didn't connection WEB configuration

2.2 VPN server (point B)

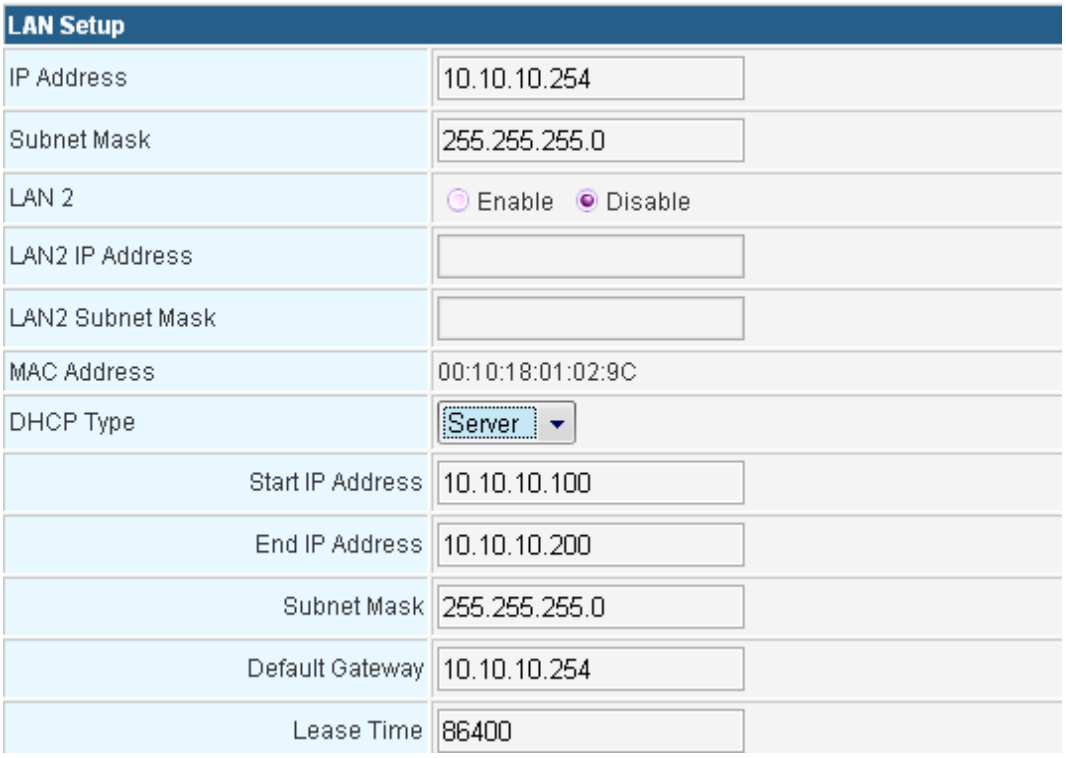
You need a H685/H800 or a CISCO router as a vpn server in point B.
And this section descibrate how to config H685/H800.

2.2.1Logon the WEB configuration

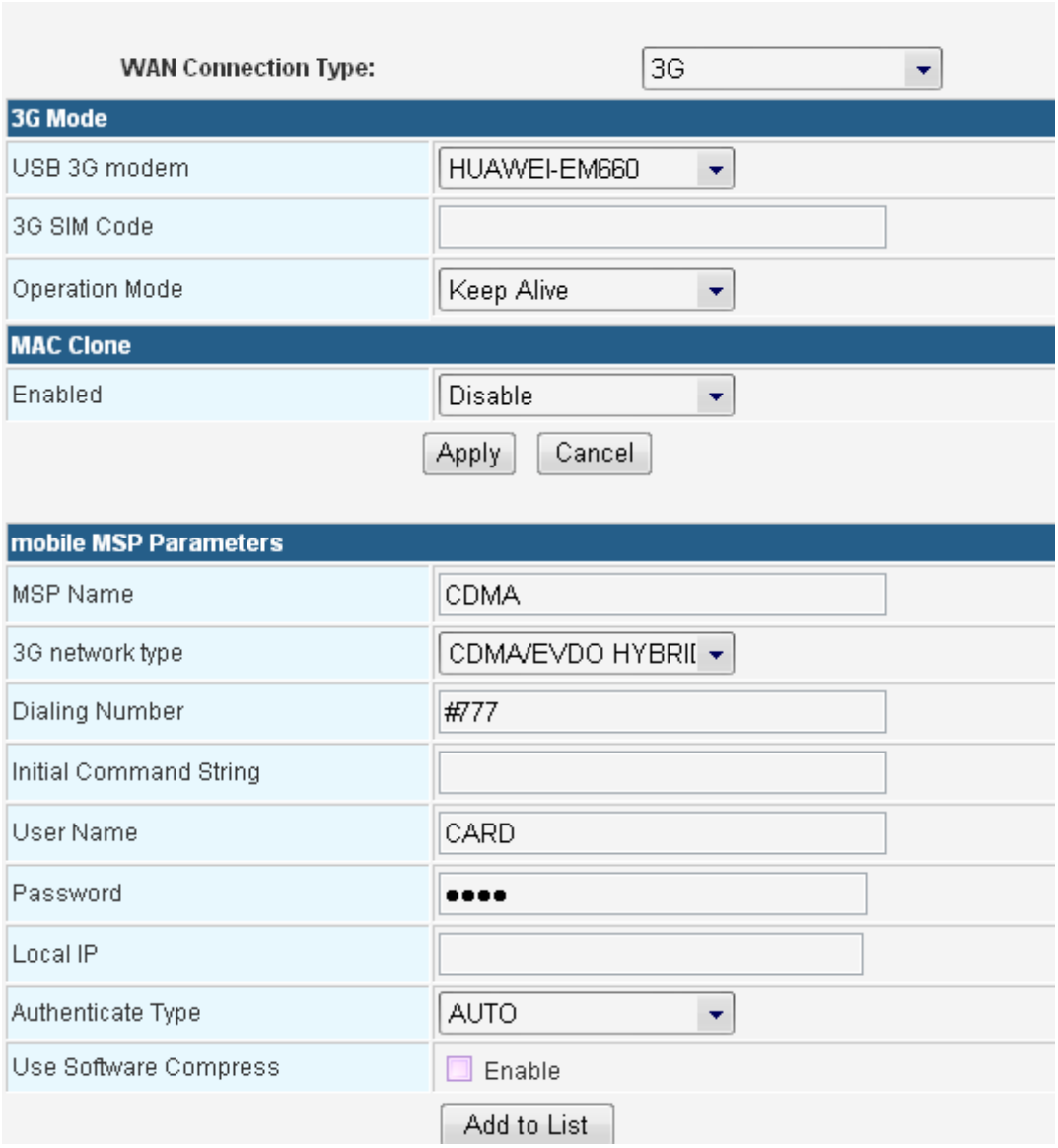
Access https://10.10.10.254 (or http://10.10.10.254:10000) to configure the VPN router from A point PC, you can see a login window
Default Username: admin
Default Password: admin

Notice:You can change the login password after you succeed logon WEB configuration, Choose "password" menu and change the login password

2.2.2Change local IP



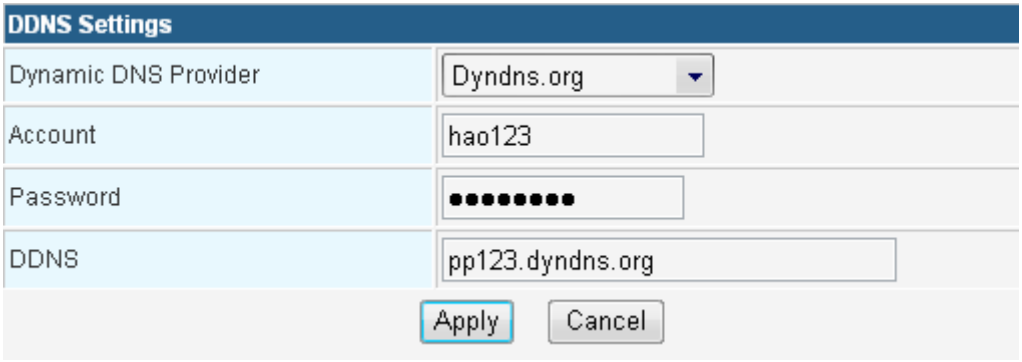
2.2.3Configure WAN



According to different ISP china command setting as below

ISP	Dial-up	Username	password	Extra initialization commands
China mobile	*99***1#	wap	wap	at+cgdcont=1,\"IP\",\"cmnet\",
China Telecom	#777	CARD	CARD	at^\pppcfg=\"card\",\"card\"

Config DDNS if you want to use dynamic IP.



- Register a Domain service from www.dyndns.org/www.no-ip.com/www.3322.org
- Configure DDNS As below

Hostname:pp123.dyndns.com
DDNS Username:hao123
DDNS Password:hao111

Select “enable”Tab to start-up DDNS, It auto change this domain name ip with every dial-up connection

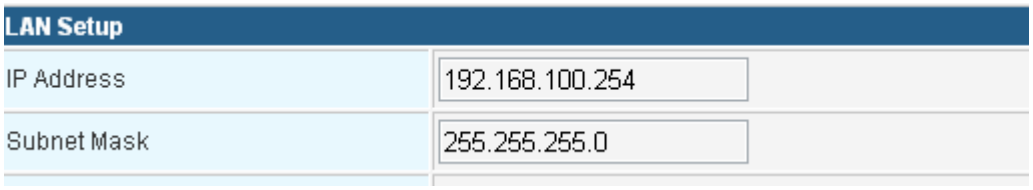
NOTE: it’s not must if you choose static IP.

2.2.4Configure VPN Router as VPN Server

The vpn router also support VPN server function. So you can config it as a vpn server.

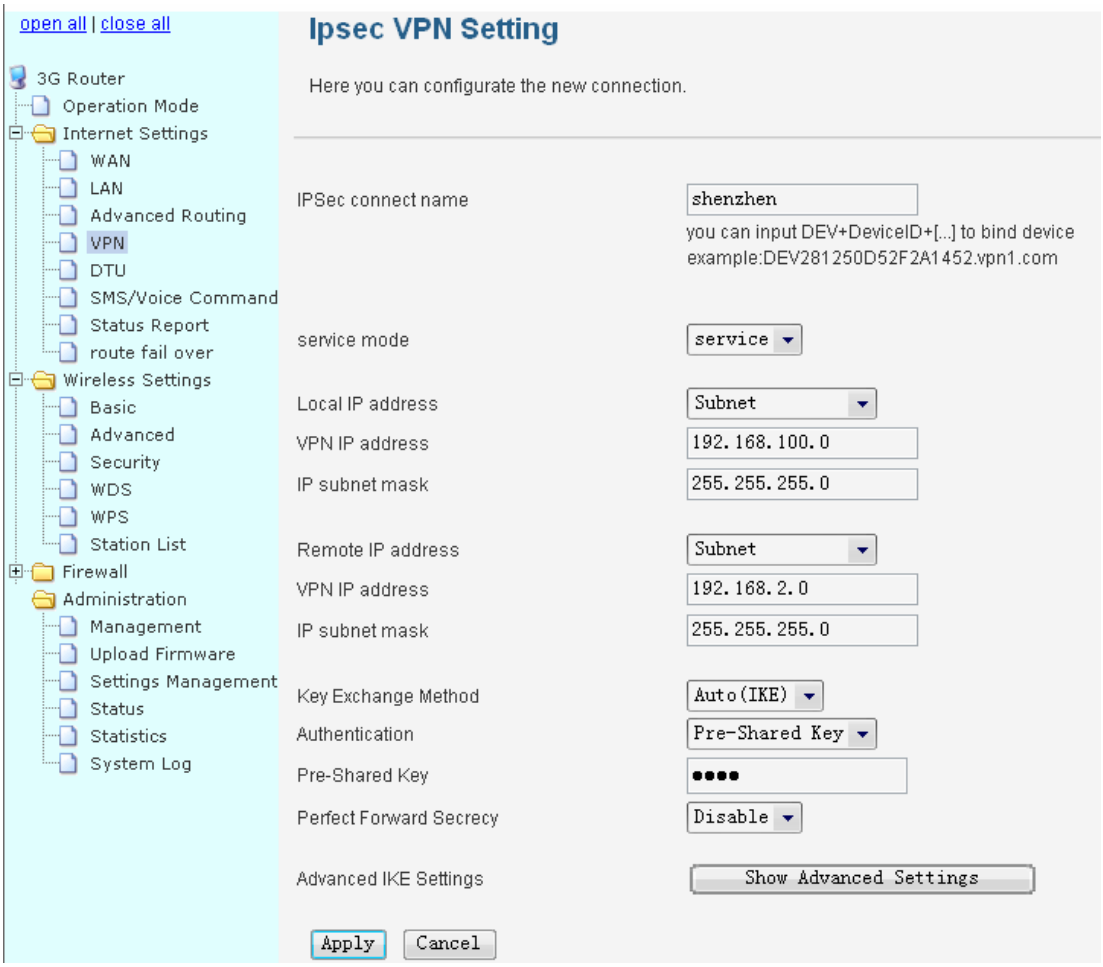
2.2.4.1Change local IP address.

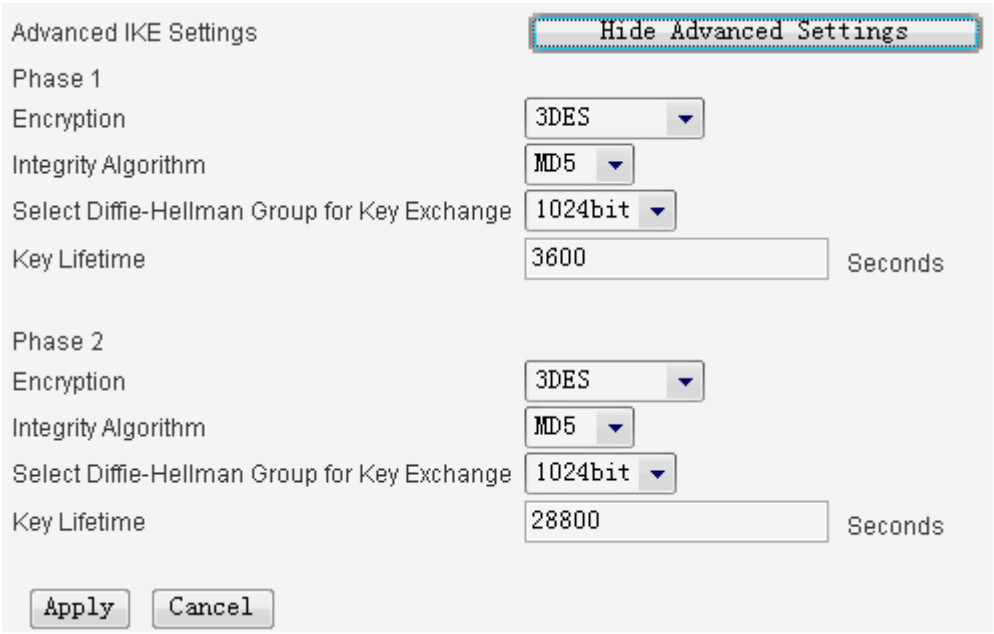
- Choose”edit”Tab,and change local IP with 192.168.100.254



2.2.4.2Configure VPN Server

- Choose VPN>Add Application
- VPN Server.Configureation as below


open all | close all
3G Router
Operation Mode
Internet Settings
WAN
LAN
Advanced Routing
VPN
DTU
SMS/Voice Command
Status Report
route fail over
Wireless Settings
Basic
Advanced
Security
WDS
WPS
Station List
Firewall
Administration
Management
Upload Firmware
Settings Management
Status
Statistics
System Log
Ipsec VPN Setting
Here you can configurate the new connection.
IPSec connect name
shenzhen
you can input DEV+DeviceID+[...] to bind device
example:DEV281250D52F2A1452.vpn1.com
service mode
service
Local IP address
Subnet
VPN IP address
192.168.100.0
IP subnet mask
255.255.255.0
Remote IP address
Subnet
VPN IP address
192.168.2.0
IP subnet mask
255.255.255.0
Key Exchange Method
Auto(IKE)
Authentication
Pre-Shared Key
Pre-Shared Key
Perfect Forward Secrecy
Disable
Advanced IKE Settings
Show Advanced Settings
Apply
Cancel


Advanced IKE Settings
Hide Advanced Settings
Phase 1
Encryption
3DES
Integrity Algorithm
MD5
Select Diffie-Hellman Group for Key Exchange
1024bit
Key Lifetime
3600
Seconds
Phase 2
Encryption
3DES
Integrity Algorithm
MD5
Select Diffie-Hellman Group for Key Exchange
1024bit
Key Lifetime
28800
Seconds
Apply
Cancel

2.2.5 Config CISCO router as VPN server

You also can use CISCO router as VPN server.
This is the sample of cisco7200 configuration:

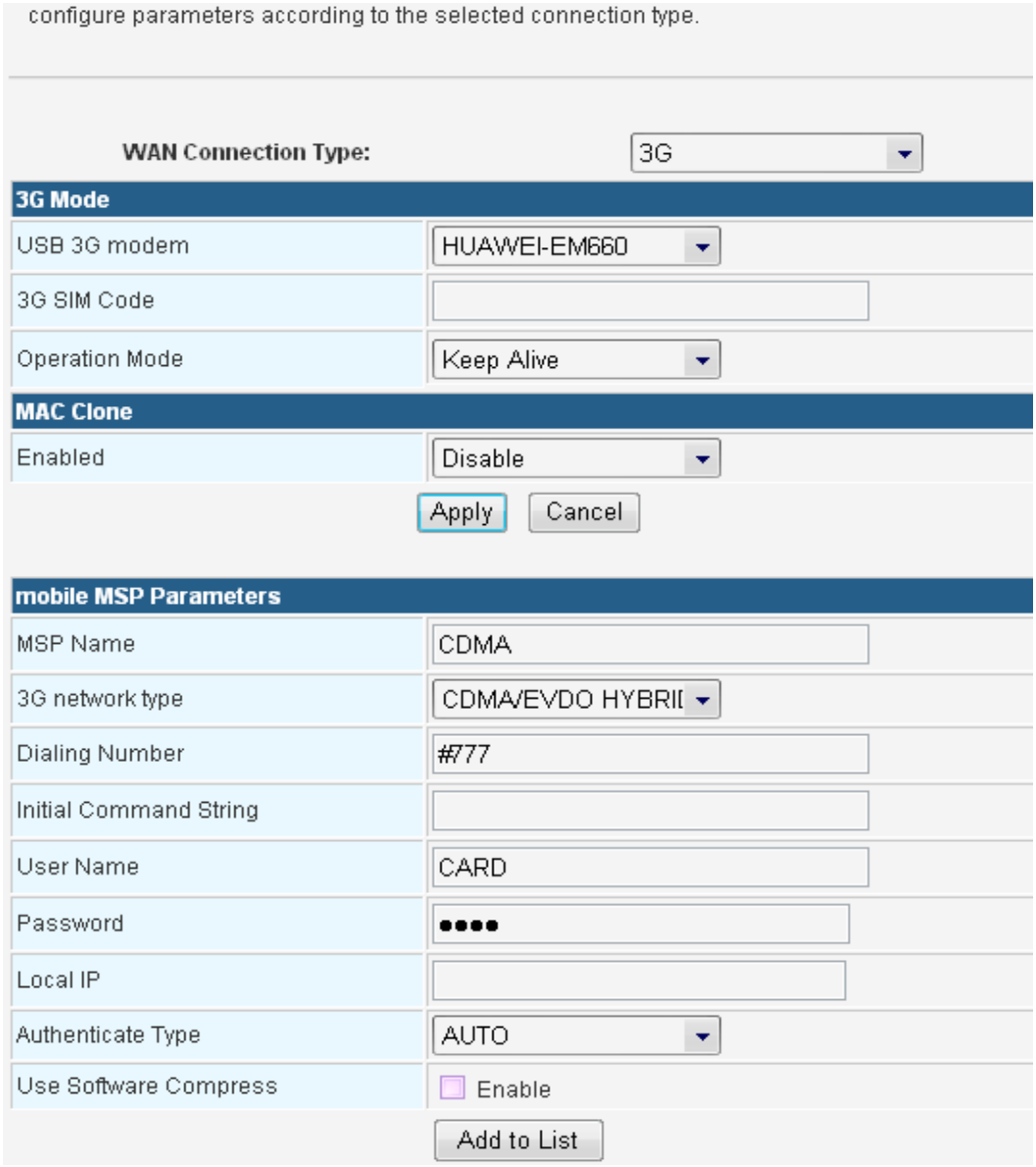
```
crypto keyring shenzhen
  pre-shared-key hostname shenzhen key test

crypto isakmp profile shenzhen
 description china SZ shenzhen
   vrf SMEP
   keyring shenzhen
   match identity host shenzhen
   keepalive 60 retry 10

  crypto ipsec transform-set vpnset esp-des esp-md5-hmac

crypto ipsec profile shenzhen
 set transform-set vpnset
 set isakmp-profile shenzhen

crypto dynamic-map shenzhen 1
 set security-association lifetime kilobytes 536870912
 set security-association lifetime seconds 43200
 set transform-set vpnset
 set isakmp-profile shenzhen
 reverse-route
crypto map COREVPN 26 ipsec-isakmp dynamic shenzhen
```

2.3 VPN client for VPN Router (point C)

Access https://10.10.10.254 (or http://10.10.10.254:10000) to configure VPN router from point E PC, you can see the following logon window.

Username :admin
Password: admin

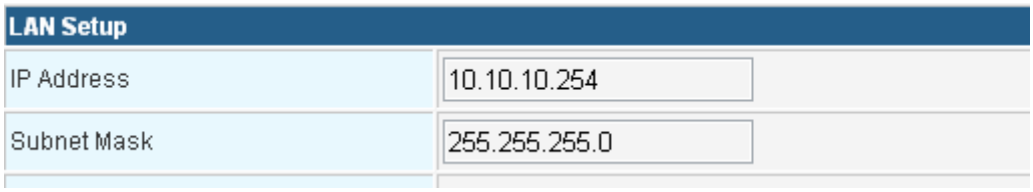
2.3.1Config WAN1.



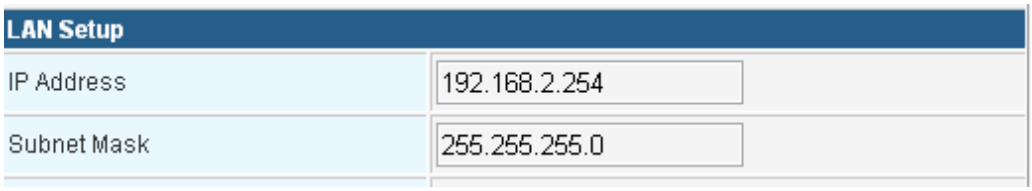
According to different ISP china command setting as below

ISP	Dial-up	Username	password	Extra initialization commands
China mobile	*99***1#	wap	wap	at+cgdcont=1,\"IP\",\"cmnet\"
China Telecom	#777	CARD	CARD	at\^pppcfg=\"card\",\"card\"

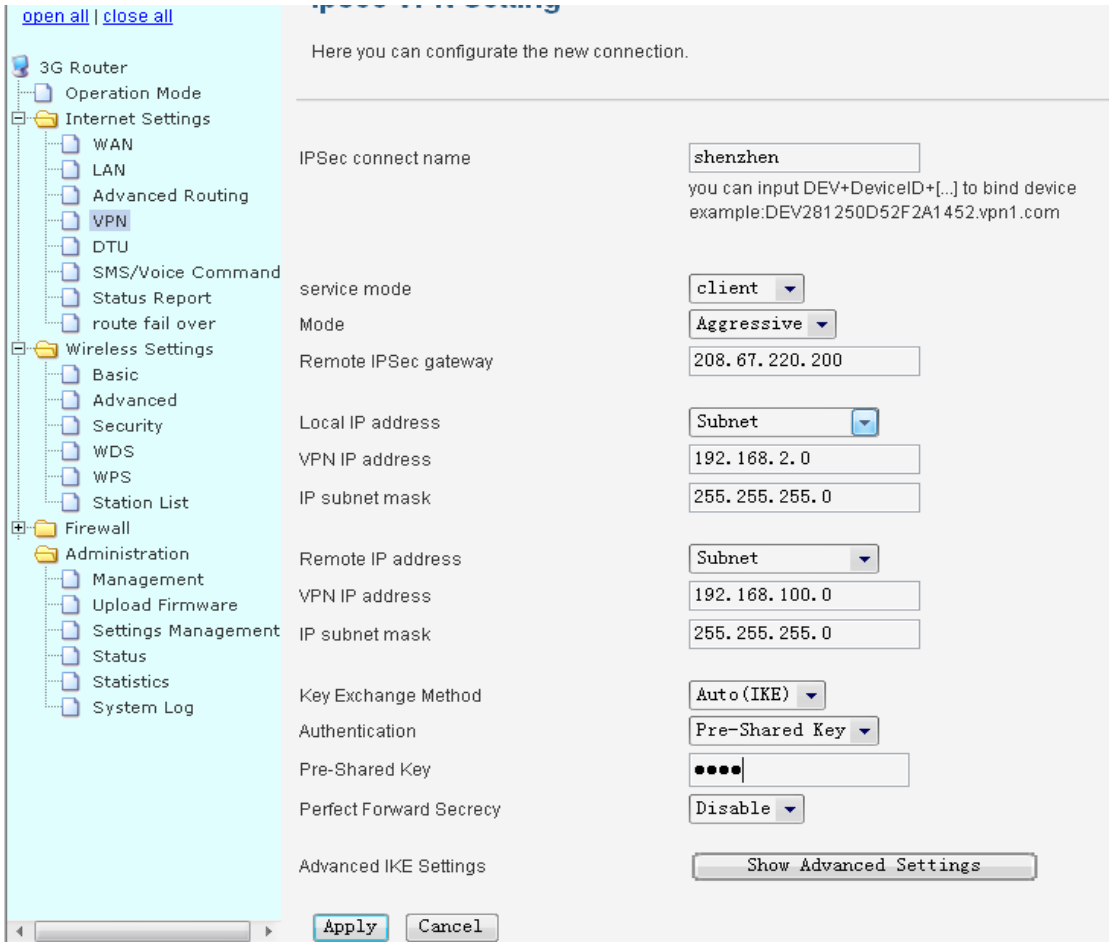
2.3.2Change local IP address.

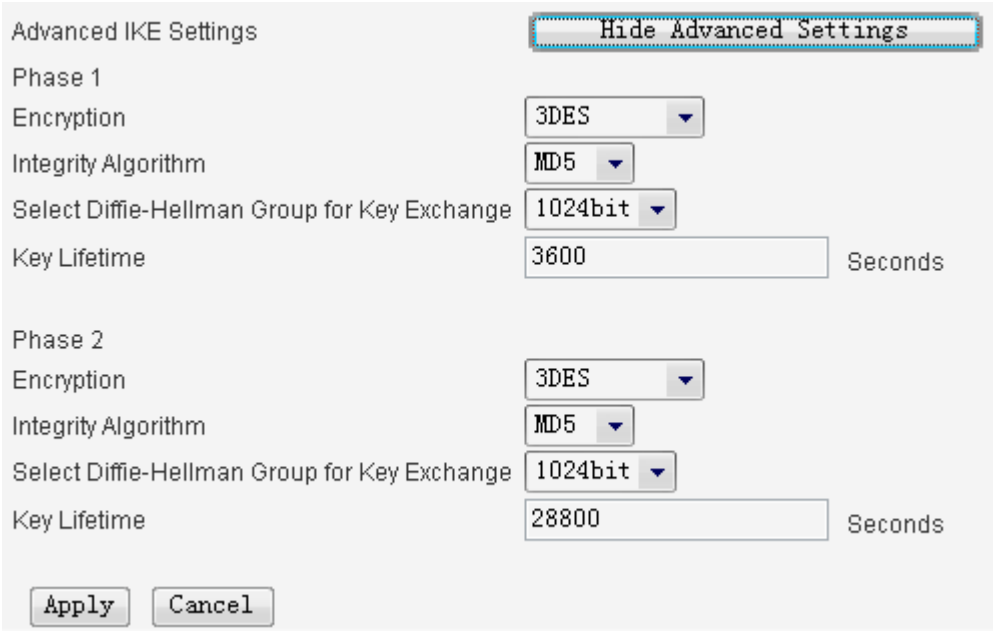


Choose"edit"Tab, and change local IP for 192.168.2.254



2.3.3Configre VPN Router as Client




Advanced IKE Settings
Hide Advanced Settings
Phase 1
Encryption
3DES
Integrity Algorithm
MD5
Select Diffie-Hellman Group for Key Exchange
1024bit
Key Lifetime
3600
Seconds
Phase 2
Encryption
3DES
Integrity Algorithm
MD5
Select Diffie-Hellman Group for Key Exchange
1024bit
Key Lifetime
28800
Seconds
Apply
Cancel

Chapter 3

3 How to configure PPTP

In order to enable and configuring PPTP for VPN, we prepare a test environment, please according to the diagram and perform the following steps
Note: Point A, B, C, E is must.

In this example, we will be working with a VPN server and some PC .Throughout the screen shots and the rest of the article; I will refer to the following IP address. Please write them down or print them for reference, it will help you understand the rest of the article

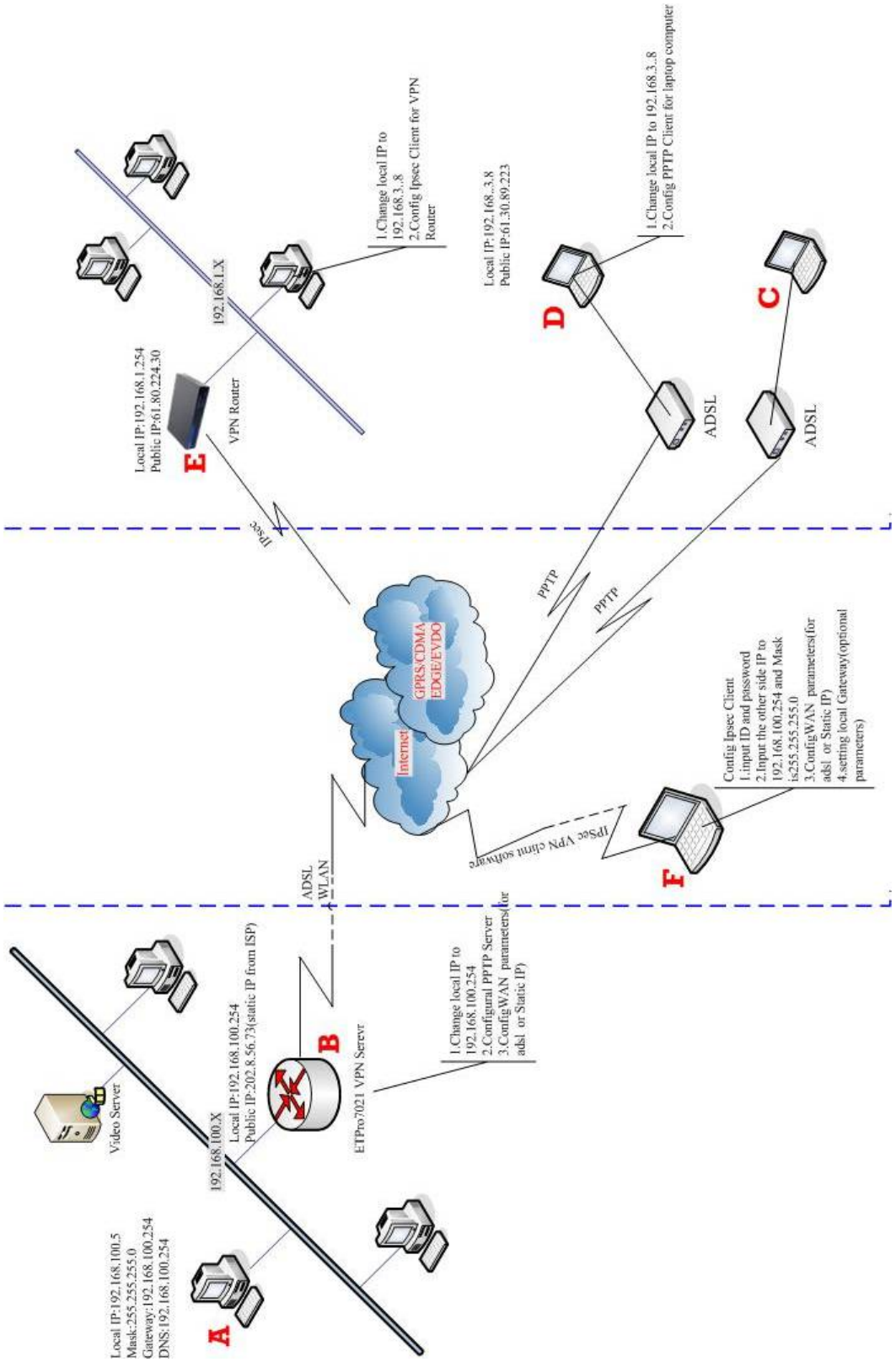
about A:
local IP:192.168.100.5
Subnet mask: 255.255.255.0
gateway:192.168.100.254

about B:
WAN IP:202.56.8.73(from your ISP)
Local Router IP:192.168.100.254

About D:
WAN IP:61.30.89.223(Remote computer on the Internet)
Local Router IP:192.168.3.8

About E:
WAN IP:61.80.224.30(Remote computer on the Internet)
Local Router IP: 192.168.1.254
LAN IP Network:192.168.1.x

about F:
local IP:192.168.100.4
Subnet mask: 255.255.255.0
gateway:192.168.100.254


1.Change local IP to 192.168.3..8
2.Config Ipsec Client for VPN Router
192.168.1.X
Local IP:192.168.1.254
Public IP:61.80.224.30
E
VPN Router
Ipsec
Local IP:192.168..3.8
Public IP:61.30.89.223
D
1.Change local IP to 192.168.3..8
2.Config PPTP Client for laptop computer
ADSL
C
ADSL
PPTP
PPTP
Internet
GPRS/CDMA
EDGE/EVDO
IPSec VPN client software
Config Ipsec Client
1.input ID and password
2.Input the other side IP to 192.168.100.254 and Mask is255.255.255.0
3.ConfigWAN parameters(for adsl or Static IP)
4.setting local Gateway(optional parameters)
F
ADSL
WLAN
1.Change local IP to 192.168.100.254
2.Configural PPTP Server
3.ConfigWAN parameters(for adsl or Static IP)
B
ETPro7021 VPN Server
Video Server
192.168.100.X
Local IP:192.168.100.5
Mask:255.255.255.0
Gateway:192.168.100.254
DNS:192.168.100.254
A

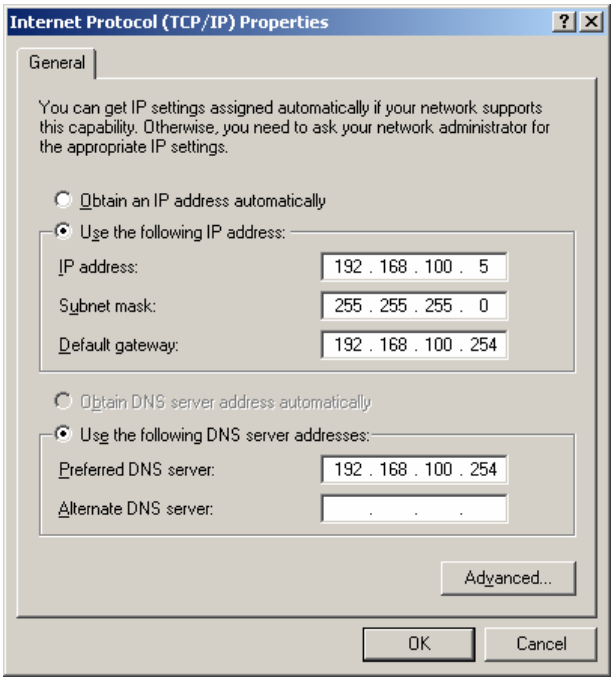
3.1 Notes about IP Your Configuration

It is wise to change the IP Schema of your cellular network from the default your router configures. This will aid you in connecting multiple networks together - especially two VPN routers of the same brand. Often the default IP Schema is 192.168.0.254, all you need to do is change the second Router. In this example, I made my first Router is 192.168.1.254 and another Router is 192.168.2.254. This step is not totally necessary but it could save you some routing headaches later.

It is also wise to convert your computers over to STATIC IP address instead of dynamic IP address. If your computers have dynamic IP address, you will not know what the IP address is of the computer you want to connect to from the road. One day it might be .2 the next day it might be .5. Again this is not necessary, but it will save you headaches later.

Static IP Schema Example
About A LAN Computer 1

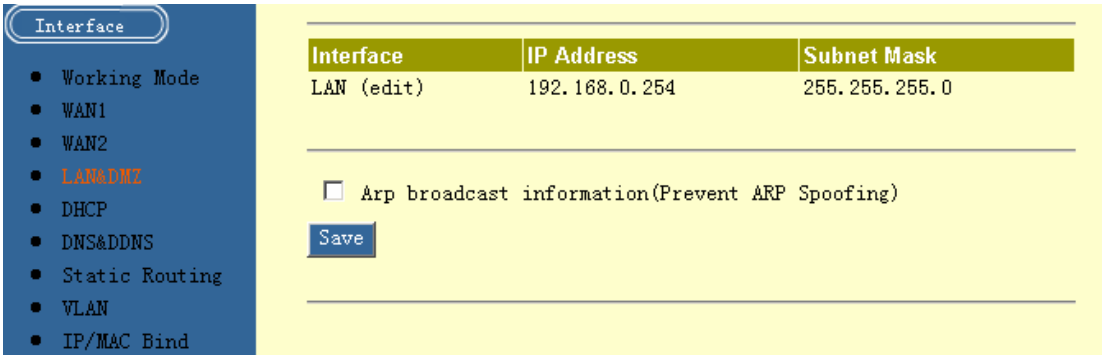
IP Address:	192.168.100.5
Subnet:	255.255.255.0
Gateway:	192.168.100.254 (router address)
DNS:	192,168.100.254 (router address again)


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 100 . 5
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
192 . 168 . 100 . 254
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
192 . 168 . 100 . 254
Alternate DNS server:
Advanced...
OK
Cancel

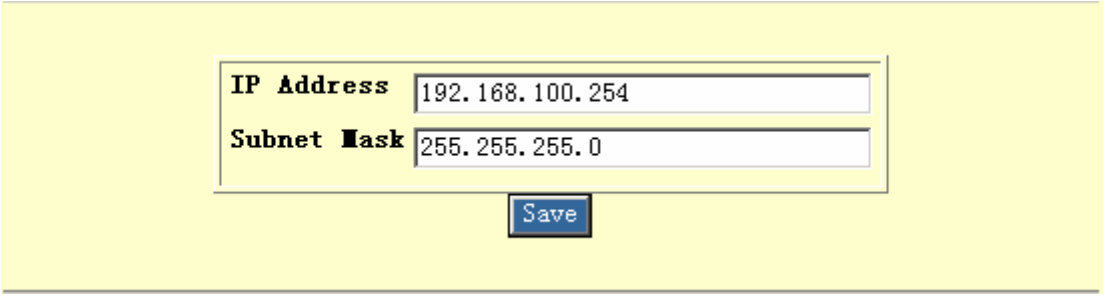
Note: You need change PC IP the same with VPN Router Gateway. Otherwise you didn't connection WEB configuration

3.2 PPTP server (point B)

3.2.1Change local IP address



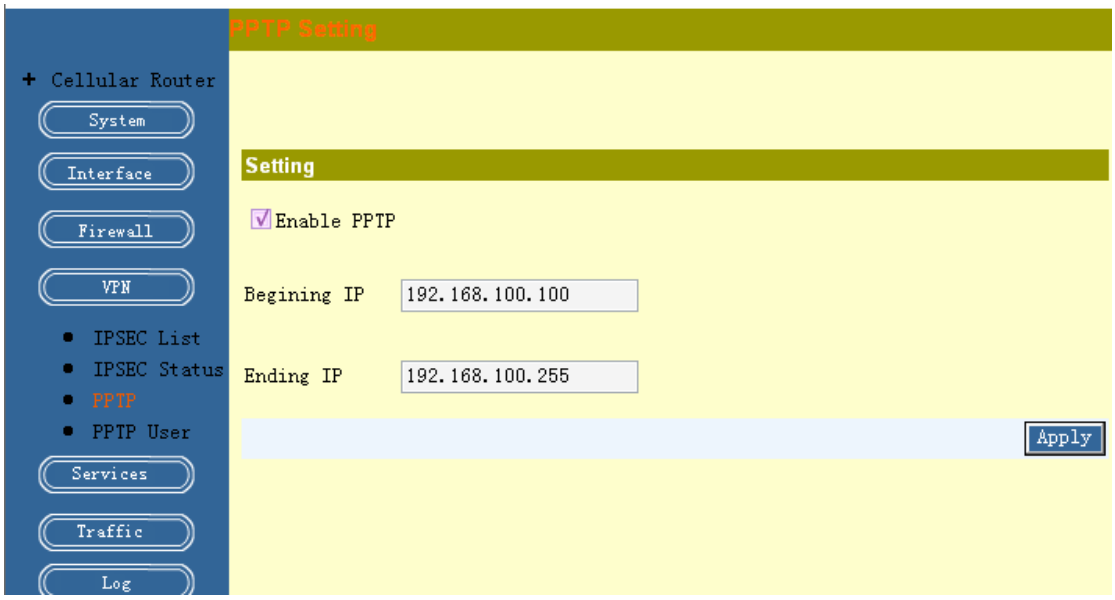
- Choice"edit"Tab,and change local IP for 192.168..100.254



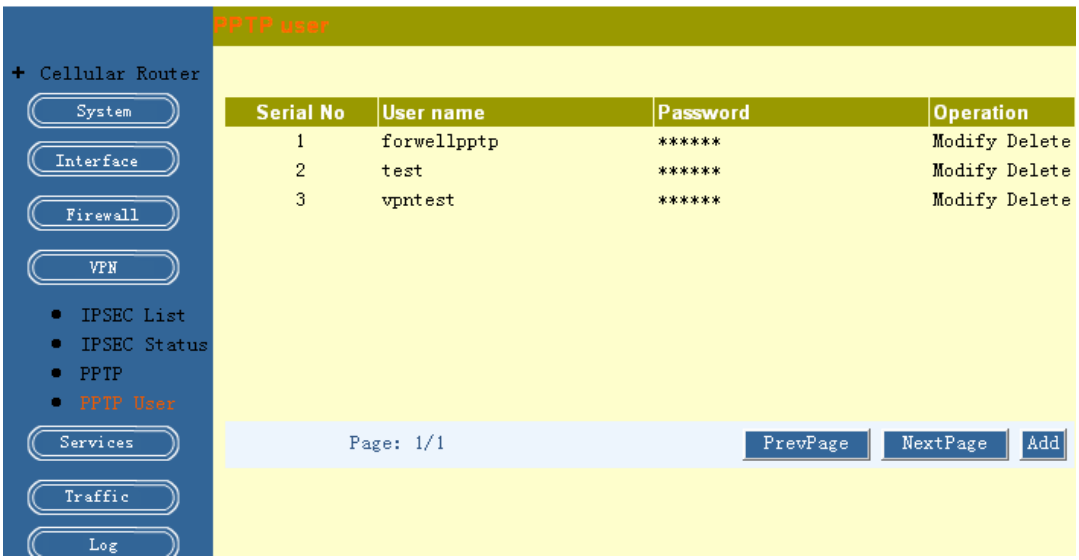
3.2.2Configuration WAN

3.2.3Configure PPTP Server

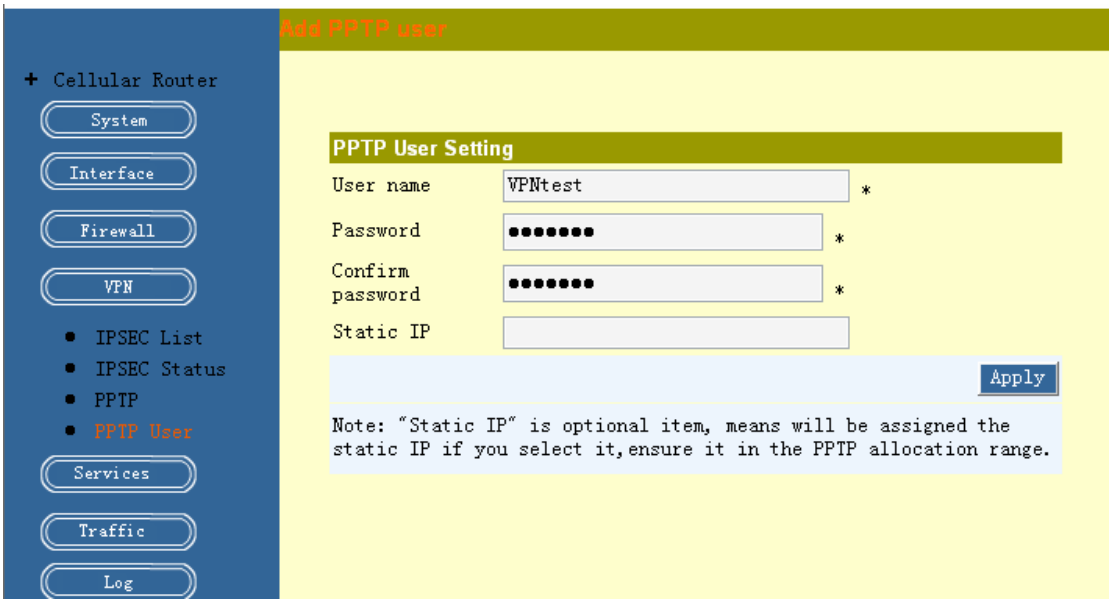
Click "VPN", and Choose"PPTP", select PPTP option, type the start IP and end IP as below



Click “Apply “， the following display as below ,click”Add”



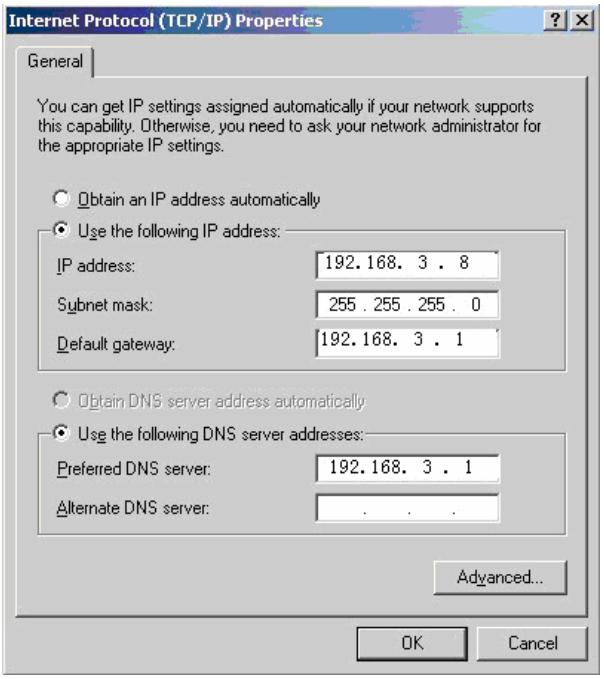
Type your name and password, click “save” button to make your setting work, then you hace finish configure Router as PPTP server



3.3 Laptop/H685(H800) as client (Point D)

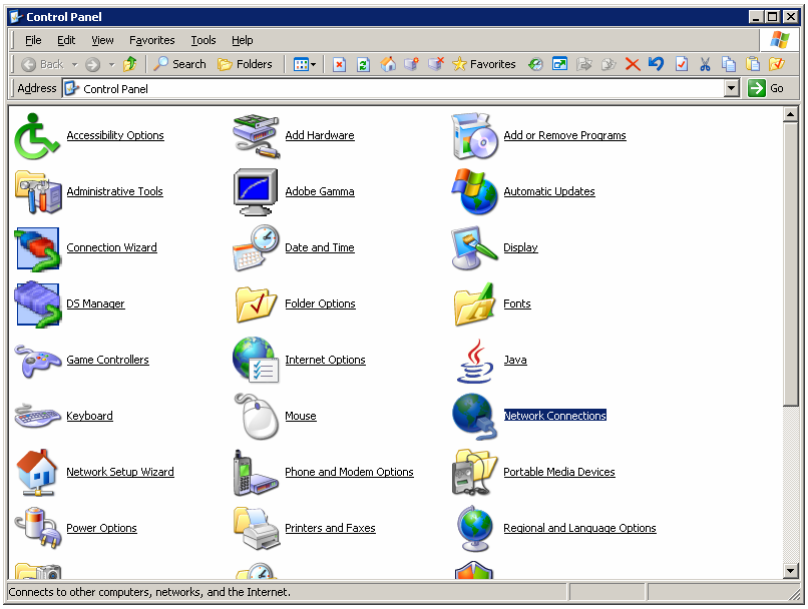
3.3.1Change local IP address

You need change the PC IP as below.

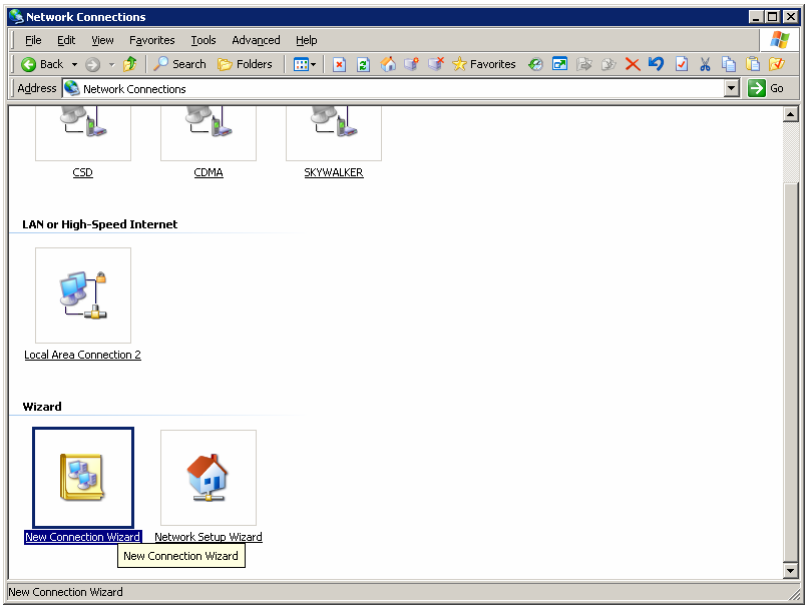

Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192.168. 3 . 8
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
192.168. 3 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
192.168. 3 . 1
Alternate DNS server:
Advanced...
OK
Cancel

3.3.2Configure PPTP client

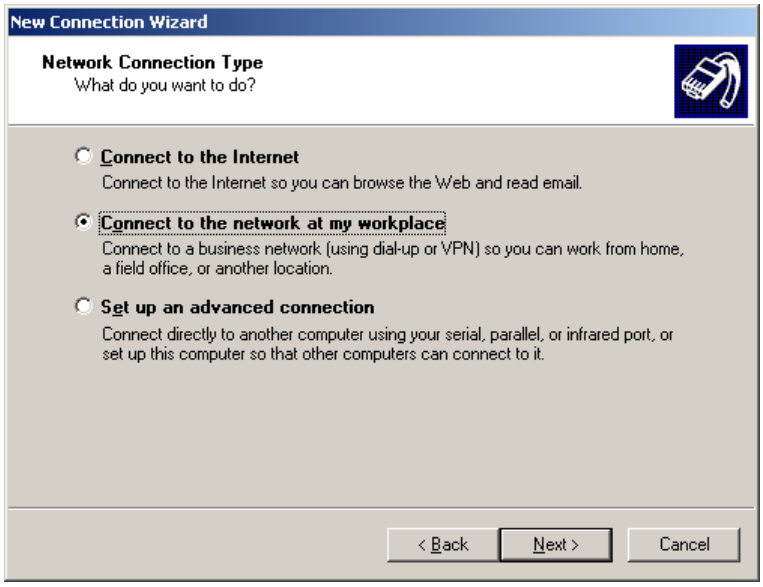
Open “Network Connections”.



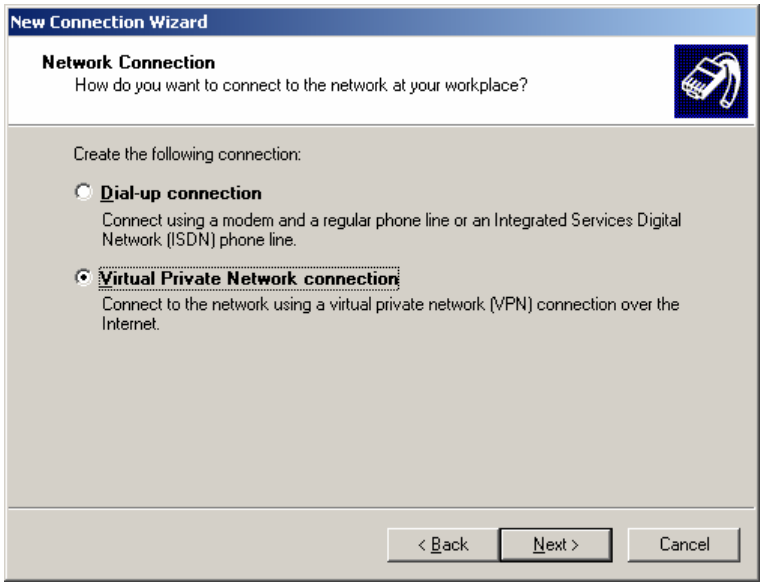
Click “network Connection” ,click “Next” to continue

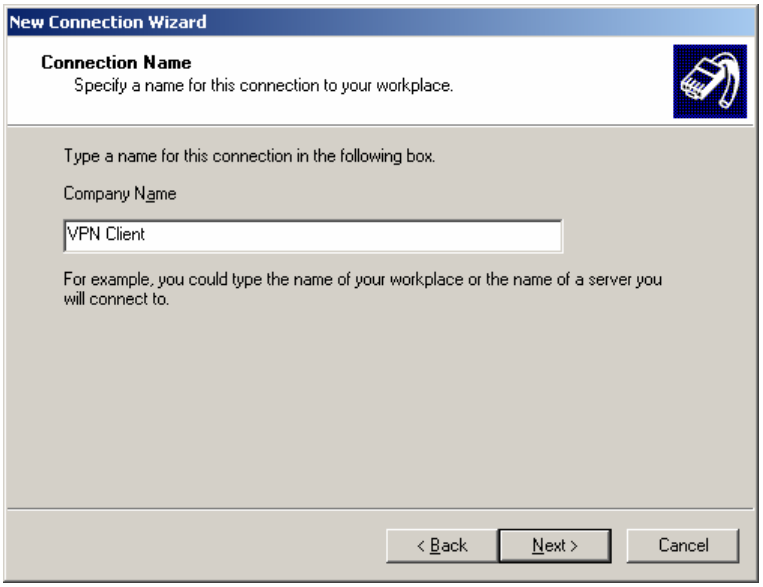


The Network Connection Wizard opens. Click “Next” to continue. Put a check mark on “Connect to the Internet at my workplace” and click next


New Connection Wizard
Network Connection Type
What do you want to do?
Connect to the Internet
Connect to the Internet so you can browse the Web and read email.
Connect to the network at my workplace
Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.
Set up an advanced connection
Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.
< Back
Next >
Cancel

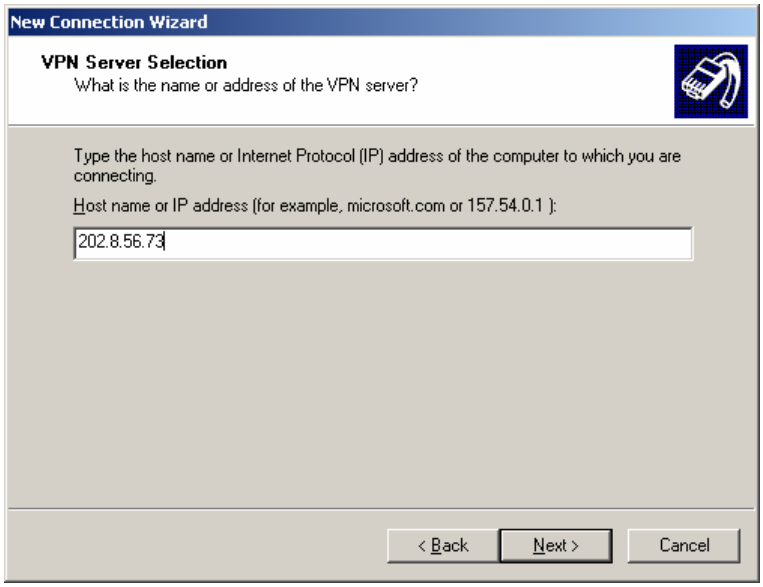
Select the option “Virtual Private Network connect” and click next


New Connection Wizard
Network Connection
How do you want to connect to the network at your workplace?
Create the following connection:
Dial-up connection
Connect using a modem and a regular phone line or an Integrated Services Digital Network (ISDN) phone line.
Virtual Private Network connection
Connect to the network using a virtual private network (VPN) connection over the Internet.
< Back
Next >
Cancel

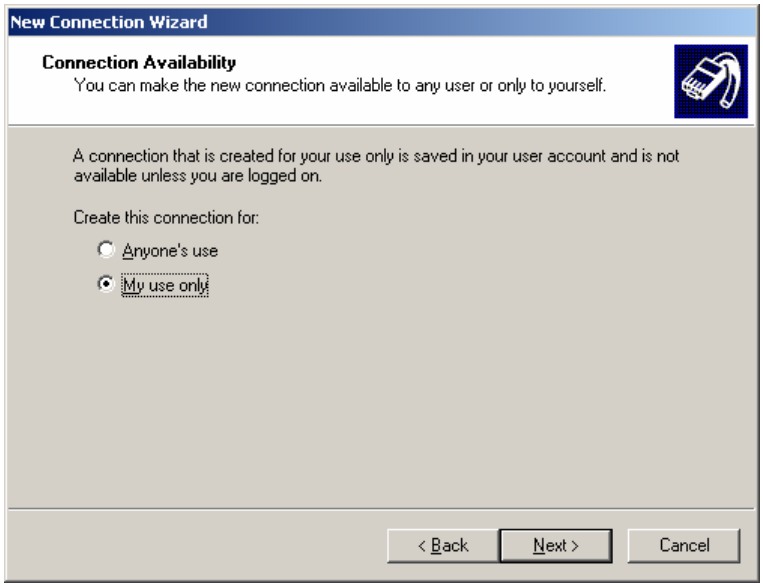

New Connection Wizard
Connection Name
Specify a name for this connection to your workplace.
Type a name for this connection in the following box.
Company Name
VPN Client
For example, you could type the name of your workplace or the name of a server you will connect to.
< Back
Next >
Cancel

Type a name for this connection

Type the host name it was VPN server IP address of the computer


New Connection Wizard
VPN Server Selection
What is the name or address of the VPN server?
Type the host name or Internet Protocol (IP) address of the computer to which you are connecting.
Host name or IP address (for example, microsoft.com or 157.54.0.1):
202.8.56.73
< Back
Next >
Cancel

Select “my Use only “option

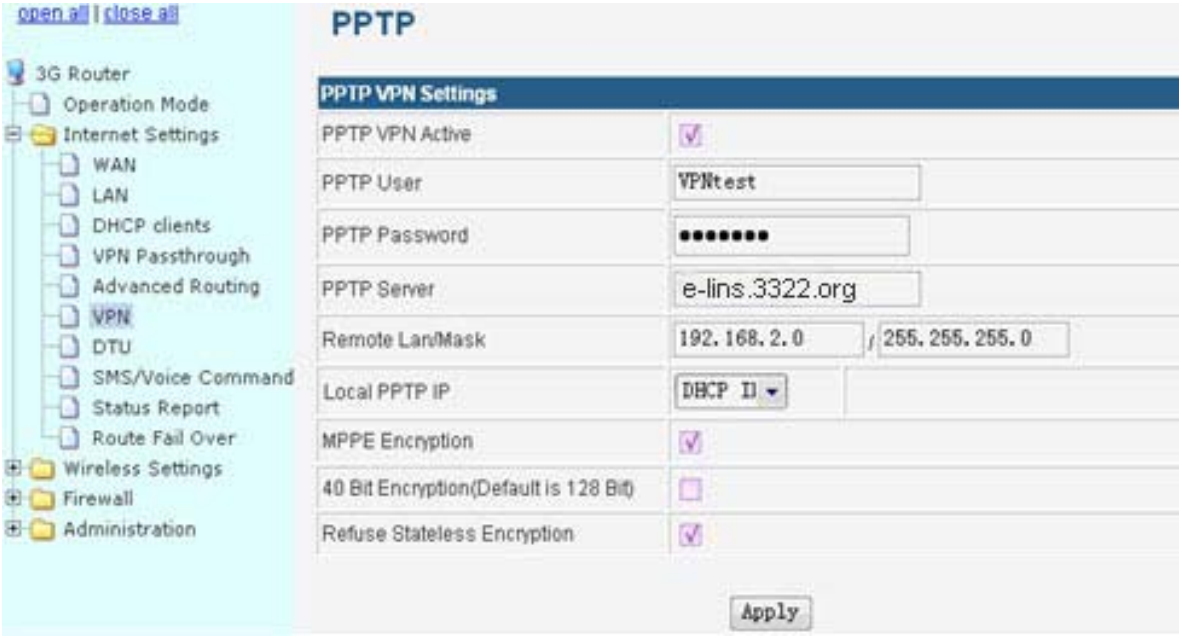

New Connection Wizard
Connection Availability
You can make the new connection available to any user or only to yourself.
A connection that is created for your use only is saved in your user account and is not available unless you are logged on.
Create this connection for:
Anyone's use
My use only
< Back
Next >
Cancel

As showing below picture, Click “Finish” to succeed your new Connection installation

New Connection Wizard
Completing the New Connection Wizard
You have successfully completed the steps needed to create the following connection:
VPN Client
The connection will be saved in the Network Connections folder.
Add a shortcut to this connection to my desktop
To create the connection and close this wizard, click Finish.
< Back
Finish
Cancel

Input user name and password, Connection will be create when both of them is the same with that in the server

3.3.3 Config PPTP client of H685/H800



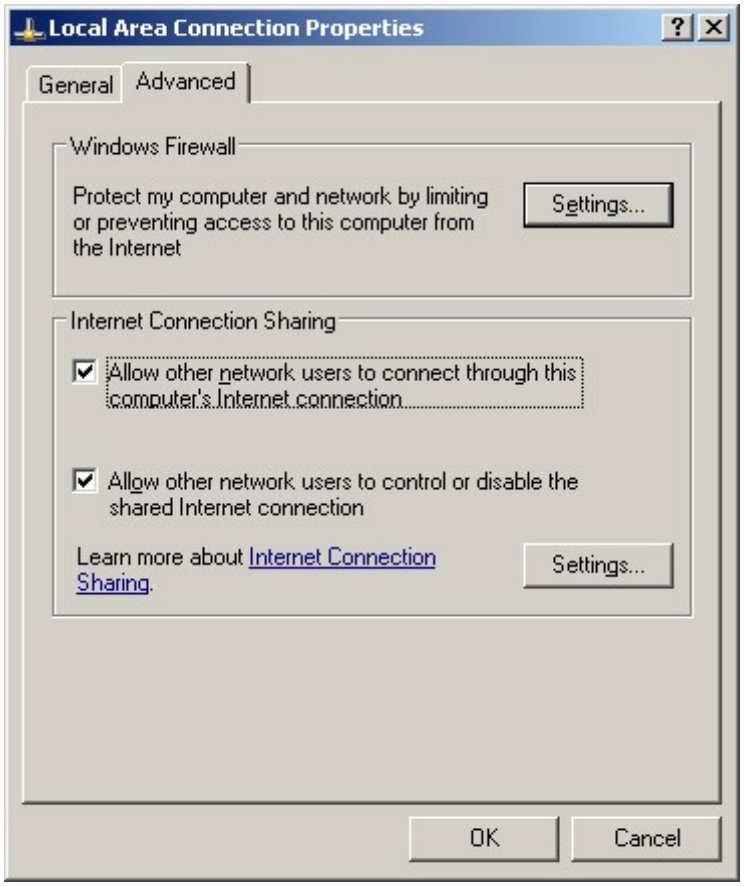
3.4 IPSec client for software (Point F)

3.4.1Config IPSec client of software

3.4.1.1Set-up

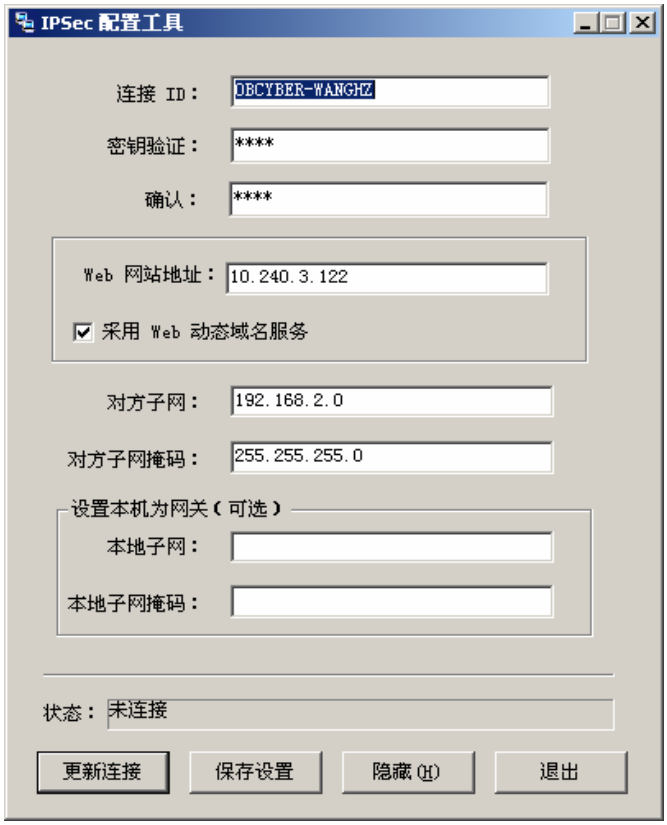
This software is suit for Win2000，Win2003，and Windows XP System, but Win2000 system need to add install SP3 or SP4.

It is suitable for personal user and subnet user connects to the company network, after you have succeeded in dialup to create a VPN network. If you need to put this computer as Gateway .at subnet network to make VPN communication. When your install it, please choice install “VPN_NAT”, don’t used NAT from window offer (it means our common used of “internet connection sharing”)


Local Area Connection Properties
General
Advanced
Windows Firewall
Protect my computer and network by limiting or preventing access to this computer from the Internet
Settings...
Internet Connection Sharing
Allow other network users to connect through this computer's Internet connection
Allow other network users to control or disable the shared Internet connection
Learn more about Internet Connection Sharing.
Settings...
OK
Cancel

3.4.1.2Configure IPSec tool

If you have succeed create a new Connection installation, Run the IPSec config tools,

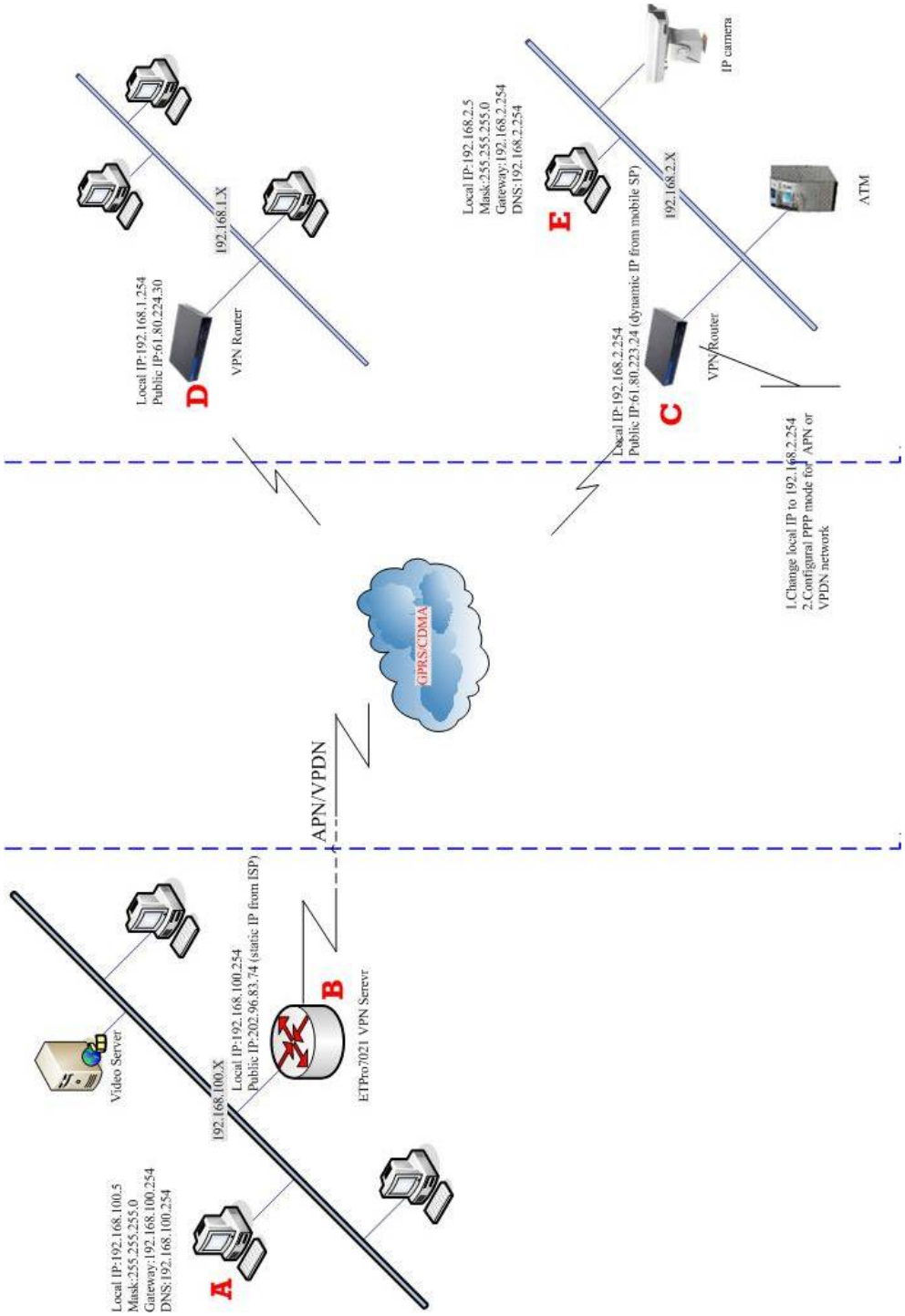


According to configuration for your VPN Router Server, type the connection ID, password and so on

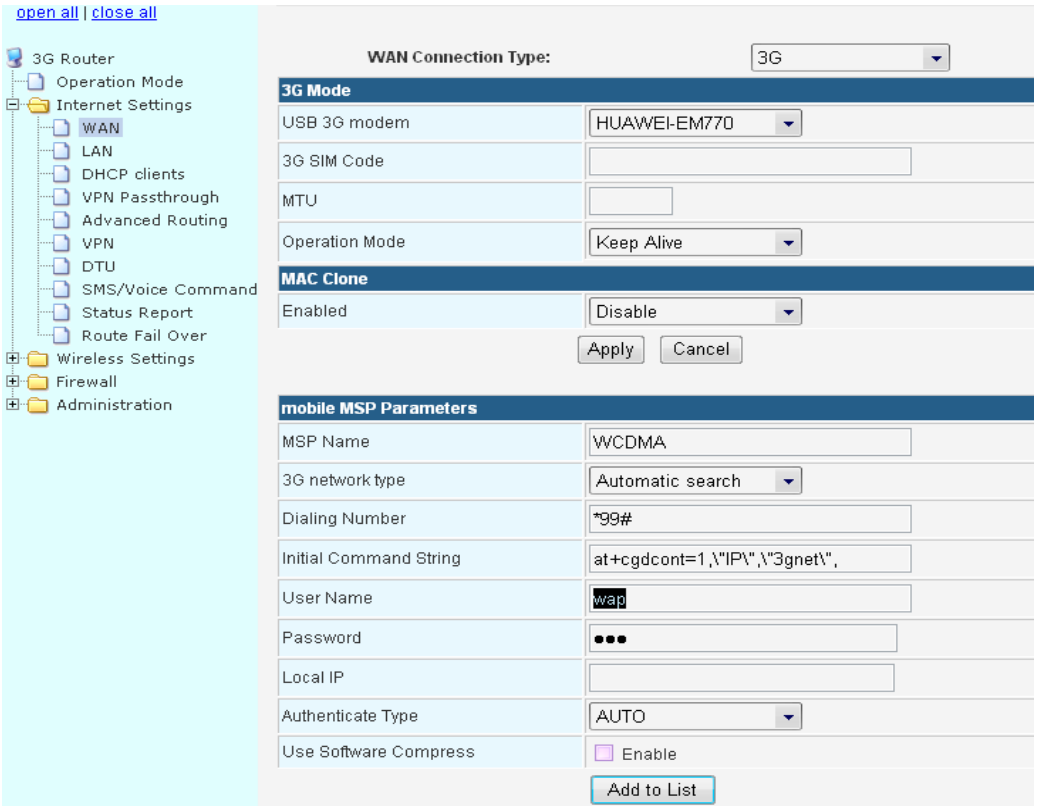
Chapter 4

4 How to configure APN or VPDN

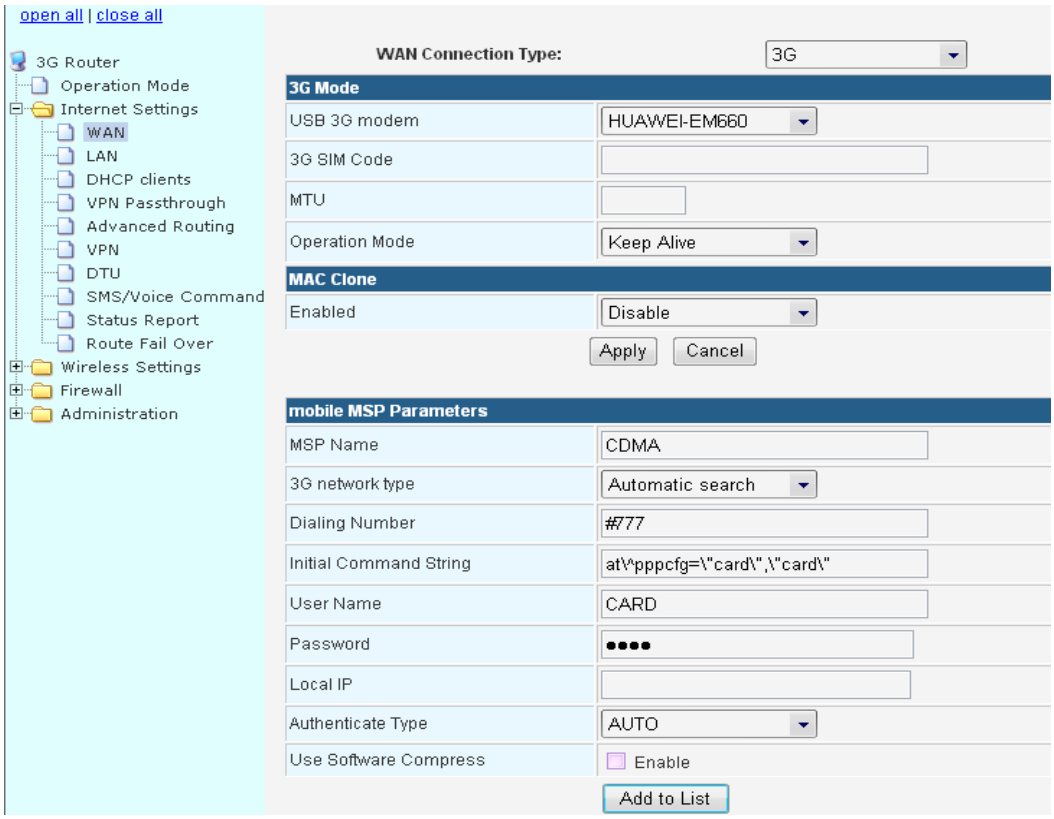
Prepare a test environment according to the diagram.


IP camera
ATM
192.168.2.X
Local IP:192.168.2.5
Mask:255.255.255.0
Gateway:192.168.2.254
DNS:192.168.2.254
E
VPN Router
Local IP:192.168.2.254
Public IP:61.80.223.24 (dynamic IP from mobile SP)
C
1.Change local IP to 192.168.2.254
2.Configural PPP mode for APN or
VPDN network
192.168.1.X
Local IP:192.168.1.254
Public IP:61.80.224.30
D
VPN Router
GPRS/CDMA
APN/VPDN
Video Server
192.168.100.X
Local IP:192.168.100.254
Public IP:202.96.83.74 (static IP from ISP)
B
ETPro7021 VPN Server
Local IP:192.168.100.5
Mask:255.255.255.0
Gateway:192.168.100.254
DNS:192.168.100.254
A

4.1 APN config



4.2 VPDN config



The following offer a China Unicom VPDN system Diagram